REMARKS/ARGUMENTS

Applicant has received the Office Action dated February 2, 2010 (hereinafter "Office Action"), which 1) rejected claims 1, 8-13, 55, 62-63, 65-67, 72-73, 80-84, 90, 97-101 and 106 as allegedly obvious under 35 U.S.C. § 103(a) over Wang (U.S. Pat. No. 6,538,997) in view of Nakagawa (U.S. Pat. App. Pub. No. 2004/0158636); 2) rejected claims 2-7, 56-61, 74-79 and 91-96 as allegedly obvious under 35 U.S.C. § 103(a) over Wang in view of Nakagawa and further in view of Perlman (U.S. Pat. No. 5,844,902) and Soumiya (U.S. Pat. No. 6,671,257); rejected claims 14, 16, 32, 34, 50, 52, 68 and 70 as allegedly obvious under 35 U.S.C. § 103(a) over Wang in view of Nakagawa and further in view of Fredericks (U.S. Pat. No. 6,347,334); 4) rejected claims 15, 33, 51 and 69 as allegedly obvious under 35 U.S.C. § 103(a) over Wang in view of Nakagawa and further in view of Lee (U.S. Pat. App. Pub. No. 2003/0099194); and 5) rejected claims 17, 35, 53 and 71 as allegedly obvious under 35 U.S.C. § 103(a) over Wang in view of Nakagawa and further in view of Hongal (U.S. Pat. App. Pub. No. 2005/0053006).[1] Claim 1 has been amended to correct a typographical error. Based upon the arguments presented herein, Applicant respectfully submits that all claims are in condition for allowance.

I. The Examiner Interviews

Applicant thanks the Examiner for the two telephonic Examiner Interviews conducted on May 11 and May 20, 2010, though no agreement was reached regarding the claims. Based on these discussions, Applicant has included additional explanations regarding the term "switching unit" in the hope that this will clarify any misunderstanding that may exist as to the plain and ordinary meaning of this term as applied to both the cited art and the claims.

II. The Rejections of the Independent Claims

In rejecting the independent claims as allegedly obvious over the cited art, it was stated in the Office Action that,

[1] Applicant notes that "Suzuki" was also recited in the rejection but never actually referenced in the body of the rejection. Applicant has assumed that this recitation was a typographical error, and the Suzuki reference is thus not addressed.

> Wang does not explicitly disclose *multiple switching units in a switch*.
>
> Nakagawa discloses *multiple switching units in a switch* (Fig.3 ref.26 is part of a switch and ref. Port Module are switching units and Para.[0016] Port module includes both input logic for receiving a packet and output logic for communicating a packet).

Office Action, p. 4.

Applicant respectfully traverses the characterization of the port modules taught by Nakagawa, noting that an overly broad definition of "switching unit" is being applied that reflects a fundamental misunderstanding of the plain and ordinary meaning of the term, as understood by one of ordinary skill in the art.

A. The Standard for Claim Interpretation

Applicant notes that while it is understood that during patent examination the pending claims must be given their broadest reasonable interpretation, such an interpretation is not without boundaries. As stated by the Court of Appeals for the Federal Circuit,

> The Patent and Trademark Office ("PTO") determines the scope of claims in patent applications not solely on the basis of the claim language, but upon giving claims their broadest reasonable construction "in light of the specification as it would be interpreted by one of ordinary skill in the art." *In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1364[, 70 USPQ2d 1827] (Fed. Cir. 2004). Indeed, the rules of the PTO require that application claims must "conform to the invention as set forth in the remainder of the specification and the terms and phrases used in the claims must find clear support or antecedent basis in the description so that the meaning of the terms in the claims may be ascertainable by reference to the description." 37 CFR 1.75(d)(1).

MPEP § 2111 (citing *Phillips v. AWH Corp.*, 415 F.3d 1303, 1316 (Fed. Cir. 2005)).

The court has further delimited these boundaries by stating that,

> "[T]he ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, *i.e.*, as of the effective filing date of the patent application."

MPEP § 2111.01-III (citing *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005)).

that,

> In construing claim terms, the general meanings gleaned from reference sources, such as dictionaries, must always be compared against the use of the terms in context, and the intrinsic record must always be consulted to identify which of the different possible dictionary meanings is most consistent with the use of the words by the inventor.
>
> MPEP § 2111.01-III (citing *Ferguson Beauregard/Logic Controls v. Mega Systems*, 350 F.3d 1327, 1338 (Fed. Cir. 2003)).

and that,

> Where there are several common meanings for a claim term, the patent disclosure serves to point away from the improper meanings and toward the proper meanings.
>
> MPEP § 2111.01 (citing *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998)).

Thus it is not the absolute broadest possible meaning of a claim term that is used to interpret a claim, but instead only those meanings that are consistent with the use of the claim term within the specification, as would be understood by one of ordinary skill in the art.

B. The Switching Units

Each of the independent claims requires a switching unit. For example, claim 1 requires "a plurality of interconnected switching units coupled to the plurality of ports so that a frame may traverse multiple switching units in the switch…." Applicant notes that the term "switching unit" is not expressly defined within the specification of the subject application as published (hereinafter, Specification), and thus the term should be interpreted according to its plain and ordinary meaning as understood by one of ordinary skill in the art when reading the Specification. Noting that the gerund form of the word switch is used (i.e., "switching," meaning "to switch"), Applicant submits that the simplest possible interpretation of "switching unit" is simply "a unit that switches."

However, because the claimed switching units are part of a claimed network switch, the meaning of "switching unit" must be consistent with this context.

Using the Specification to "point away from the improper meanings and toward the proper meanings," as indicated by the MPEP sections and case law cited above, Applicant notes that the Specification provides the following descriptions:

> **[0029]** Switch construct **30** is the part of the switch responsible for internally transporting frames between switch ports **22-28**. A number of technologies are available for carrying out the internal transport, including circuit switching and frame switching. Address controller **34** may be responsible for obtaining the domain ID of the switch **20** and allocating port or area IDs within this domain.
>
> **[0030]** The path selector **36** and the router **32** are both logical entities that facilitate frame routing from a source to a destination within a fabric. The path selector **36** determines viable paths and performs the FSPF protocol to develop the particular paths. The router **32** may then use the output of the path selector **36** to develop its routing tables and use its routing tables to determine the appropriate path to route a frame.
>
> * * *
>
> **[0062]** The foregoing discussion was directed to single-tier switches in which a single switching unit is responsible for routing frames. Multiple-tier-switches may also receive the tracer frame. **FIG. 7** shows an exemplary multiple tier-switch **700**. Although a multiple-tier switch may posses any number of switching units, the multiple-tier switch **700** possesses three levels of such units. A frame may be routed through an edge switching unit **702**, a core switching unit **706**, and an edge switching unit **704** before leaving the multiple-tiered switch **700**. Each switching unit may possess distinct routing functions to direct the frame to the proper port.

Specification, ¶¶ [0029-0030] and [0062].

From the above it is clear that the single switching unit of the embodiment described in paragraphs [0029] and [0030] is responsible for routing frames. This routing is described as the use of routing tables by router 32 to determine the path through switch construct 30. Switch construct 30 may use such known technologies as circuit switching and packet switching to internally transport the frames from any switch port acting as a source port to any other switch port acting as a destination port.

Applicant notes that, as is well known in the art, both circuit switching and packet switching perform the required switching by creating a temporary path between the source port and the destination port. For example, at least one technical dictionary defines the term "switching" as follows:

> **switching** \swich´ĕng\ *n.* A communications method that uses temporary rather than permanent connections to establish a link or to route information between two parties. In the dial-up telephone network, for example, a caller's line goes to a switching center, where the actual connection is made to the called party. In computer networks, message switching and packet switching allow any two parties to exchange information. In both instances, messages are routed (switched) through intermediary stations that together serve to connect the sender and the receiver.

Microsoft Press Computer Dictionary, 455 (3d ed. 1997).[2]

As can be seen from the definition above, routing is an essential part of the switching definition. Indeed, in the example provided "switched" and "routed" are used interchangeably within the packet switching context. Further, such a definition is fully

[2] Applicant notes that this definition is presented merely to show how one of ordinary skill in the art would understand the term "switching" within the context of network communications. Such a definition is thus not intended to supplant or limit the plain and ordinary meaning of the term, but simply presented as an example of such meaning. Also, the cited reference has been included in an Information Disclosure Statement submitted concurrently with this Response.

consistent with the terms "switching" and "switching unit" as used in the claims and the Specification. Applicant thus submits that any definition of the term "switching" or "switching unit" used to interpret the independent claims that fails to take into account the routing function inherently performed by the claimed switching units is not consistent with either how one of ordinary skill in the art would understand the term or with how the term is used in the claims in light of the Specification; such a deficient definition is therefore improper.

C. The Rejections

As noted above, it was alleged in the Office Action that Nakagawa teaches the switching units required by claim 1. More specifically, the port modules 28 within the switch core 26 shown in FIG. 3 of Nakagawa (reproduced below) were analogized to the required switching units.

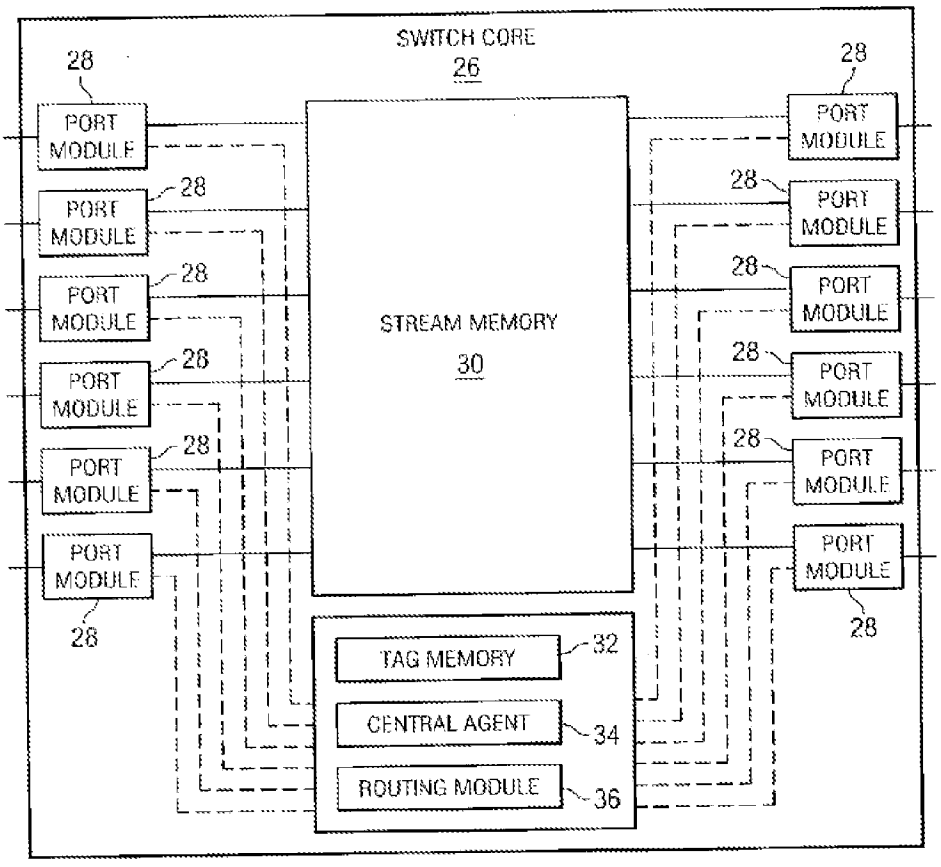

FIG. 3

Nakagawa, FIG. 3.

Applicant notes that Nakagawa merely describes port modules 28 as "provid[ing] an interface between switch core 26 and a port 24 of switch 22." Nakagawa, lines 1-2 of ¶ [0016]. There is no teaching or suggestion anywhere within Nakagawa of any routing or switching function performed by the port modules. What Nakagawa *does* teach is that routing module 36 performs the routing required to switch packets through switch core 26. More specifically, Nakagawa teaches,

> [0036] When a first port module **28** writes a packet to stream memory **30**, first port module **28** can communicate to routing module **36** information from the header of the packet (such as one or more destination addresses) that routing module **36** can use to identify one or more second port modules **28** that are designated port modules **28** of the packet. First port module **28** can also communicate to routing module **36** an address of a first block **38** to which the packet has been written and an offset that together can be used by second port modules **28** to read the packet from stream memory **30**. Routing module **36** can identify second port modules **28** using one or more routing tables and the information from the header of the packet and, after identifying second port modules **28**, communicate the address of first block **38** and the offset to each second port module **28**, which second port module **28** can add to an output queue, as described more fully below.
>
> Nakagawa, ¶ [0036]; *see also* FIG. 3.

Thus the port modules do not perform any of the routing functions necessary to switch the packet from an input port to an output port. Instead, the input port module simply provides packet header information and the location in stream memory 30 of the received packet to routing module 36, and it is routing module 36 that uses the information to route the incoming packet. Such routing is performed by using routing tables to identify a destination port and to provide to the output port module the address within stream memory 30 where the now outgoing packet can be found. The output port module then simply reads the packet from stream memory 30 and outputs the packet. None of the operations performed by port modules 28, either as an input port or as an output port, are taught as routing or switching functions. Indeed, the functions that are described (e.g., moving data between a hardwired port and locations in memory or providing received

packet information to a routing function) are nothing more than those functions typically performed by interface logic within a network switch.

For at least these reasons, Applicant submits that Nakagawa does not teach "a plurality of interconnected switching units coupled to the plurality of ports so that a frame may traverse multiple switching units in the switch," as required by independent claim 1. Applicant thus respectfully submits that the claim is not obvious over the cited art and respectfully request withdrawal of the rejection of claim 1.

Further, because independent claims 55, 73 and 90 each include limitations similar to those of claim 1, Applicant respectfully submits that these claims are also not obvious over the cited art for at least the same reasons presented above, and thus also request withdrawal of the rejections of claims 55, 73 and 90.

III. The Dependent Claims

Applicant submits that because the pending dependent claims each includes the limitations of their corresponding independent claims, dependent claims 2-18, 56-63, 65-72, 74-89 and 91-106 are also not obvious over the cited art for at least the same reasons presented above. Applicant thus also respectfully requests withdrawal of the rejections of the dependent claims.

A. Dependent Claims 9, 63, 81 and 98

Also, in rejecting dependent claims 9, 63, 81 and 98 as allegedly obvious over the cited art, it was stated in the Office Action that,

> Wang discloses *adding information to the payload of the frame when the frame is traveling from the original source to the original destination and from the original destination to the original source* (Col.3 lines 65-67 the bridges will add their respective identifiers such as their respective MAC addresses, or other internal identifiers and Col.4 lines 14-20 The data added to the packet include an identifier of the node. The data may include other information such as a port on the node at which the trace packet was received and transmitted).

Office Action, p. 6.

Applicant traverses the rejections of the claims, noting that Wang does not teach or suggest sending a trace packet from the packet's original destination back to its original source.

More specifically, Wang teaches three types of packets: 1) a trace request packet sent to the source node to initiate a trace;[3] 2) a trace packet which is sent from the source node to the destination node;[4] and 3) a trace response packet sent by the destination node to a trace response node.[5] The trace response packet includes the trace information previously accumulated in the trace packet as it traversed the network from the source node to the destination node.[6] Thus, Wang teaches sending trace packets only from source to destination nodes. The only packets send out by a destination node is a trace response packet, which is distinct from the trace packet, is not sent out to the original source node and does not include any additional information reflecting the path taken by the trace response packet. Wang thus does not teach or suggest all of the limitations of claims 9, 63, 81 and 98. Applicant therefore respectfully request withdrawal of the rejections of these claims.

B. Dependent Claims 11, 12, 65, 66, 82, 83, 99 and 100

Additionally, in rejecting dependent claims 11, 65, 82, and 99 as allegedly obvious over the cited art, it was stated in the Office Action that,

> Wang discloses *selecting the transmit port based on normal routing rules used for frames not having information added to the payload of the frame* (Fig.2 where the packets are routed based on information in the packet and Col.3 lines 62-64 The bridges that have layer-2 trace logic look at the contents of the packets and determine the actions that they should take upon the packet).
>
> Office Action, pp. 6-7,

and further, in rejecting dependent claims 12, 66, 83, and 100[7] as allegedly obvious over the cited art, that,

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[3] *See* Wang, col. 3, lines 4-10.
[4] *See* Wang, col. 3, lines 12-32.
[5] *See* Wang, col. 3, lines 32-33.
[6] *See* Wang, col. 3, lines 33-39.
[7] Applicant notes that claim 99 appears to have been erroneously listed in this rejection.

> Wang discloses *selecting the transmit port based on source routing rules used for frames having information added to the payload of the frame* (Fig.2 where the packets are routed based on information in the packet and Col.3 lines 62-64 The bridges that have layer-2 trace logic look at the contents of the packets and determine the actions that they should take upon the packet).
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> Office Action, p. 7.

Applicant traverses these rejections, noting that nowhere within Wang is there any teaching or suggestion regarding how packets are forwarded or routed.

More specifically, Wang merely teaches that,

> The trace packet is addressed directly to the next bridge in the path. A special MAC address is used to address the packet to the next bridge in the path. This MAC address is interpreted as a sink so that the respective bridges in the path do not merely automatically forward the packet. The MAC address causes the respective bridges to act upon the packet rather than simply forwarding it. The bridges that have layer-2 trace logic look at the contents of the packet and determine the actions that they should take upon the packet. For example, the bridges will add their respective identifiers, such as their respective MAC addresses, or other internal identifiers.
>
> Wang, col. 3, lines 56-67.

Thus the only action taken by the bridge taught by Wang is the addition of data to the packet and the forwarding of the packet. There is no teaching or suggestion anywhere within Wang detailing how routing is performed. Applicant respectfully submits that it is thus improper to read such broad descriptions as "forwarding" and "the actions that they should take upon the packet" as teaching the selecting of a transmit port based on the source routing information used for frames having information added to the payload of the frame, as required by the claims.

For at least these reasons, Applicant submits that none of the cited art, either alone or together, teaches or suggests all of the limitations of dependent claims 12, 66, 83, 99 and 100, and thus does not render the claims obvious. Applicant therefore respectfully requests withdrawal of the rejections of these claims.

C. Dependent Claims 13, 67, 84 and 101

Further, in rejecting dependent claim 13, 67, 84 and 101 as allegedly obvious over the cited art, it was stated in the Office Action that,

> Wang discloses *using normal routing rules used for frames not having information added to the payload of the frame if the source routing information does not indicate a device directly connected to the switch* (Col.3 lines 58-59 This MAC address is interpreted as a sink and Col.3 lines 62-64 The bridges that have layer-2 trace logic look at the contents of the packets and determine the actions that they should take upon the packet).
>
> Office Action, p. 7.

Applicant respectfully traverses the rejections, noting that as explained above Wang does not teach or suggest any specific method for performing the forwarding taught. Thus Wang cannot and does not teach or suggest using normal routing rules used for frames not having information added to the payload of the frame if the source routing information does not indicate a device directly connected to the switch, as required by the claims.

For at least these reasons, Applicant submits that none of the cited art, either alone or together, teaches or suggests all of the limitations of dependent claims 13, 67, 84 and 101, and thus does not render the claims obvious. Applicant therefore respectfully requests withdrawal of the rejections of these claims.

D. Dependent Claims 18, 72, 89 and 106

Also, in rejecting dependent claim 18, 72, 89 and 106 as allegedly obvious over the cited art, it was stated in the Office Action that,

> Wang discloses *determining if the switch was the original source of the frame, and if so, to capture the frame* (Col.3 lines 62-64 The bridges that have layer-2 trace logic look at the contents of the packets and determine the actions that they should take upon the packet).
>
> Office Action, p. 7.

Applicant respectfully traverses the rejections, noting that there is no basis whatsoever for interpreting the packet inspection and action determination by the bridges of Wang as

teaching or even suggesting something as specific as the capture of a frame if a switch receiving the frame is the original source of the frame, as required by the claims. As already explained the only actions taught by Wang that are performed on trace packets are adding data to the packets and forwarding the packets.

For at least these reasons, Applicant submits that none of the cited art, either alone or together, teaches or suggests all of the limitations of dependent claims 18, 72, 89 and 106, and thus does not render the claims obvious. Applicant therefore respectfully requests withdrawal of the rejections of these claims.

E. Dependent Claims 2-7, 56-61, 74-79 and 91-96

Additionally, in rejecting dependent claim 2-7, 56-61, 74-79 and 91-96 as allegedly obvious over the cited art, it was stated in the Office Action that,

> Soumiya discloses *the information including transmit and receive rates based on a first defined period and a second defined period that is greater than the first defined period and the number of frames and words transmitted and received* (Fig.26 ref. 8~9 is a rate field, Col.26 lines 21-23 the rate changing unit may change the explicit rate that the rate calculating unit calculates at a predetermined ratio and Col.35 lines 21-36 the prolongment of the observation period means that an interval between ER calculation times becomes longer. The capability for calculating the ER in an observation period which is shorter than a specified observation period and Col.7 lines 27-28 "an arrived cell number counter for counting a number of arrived cells in correspondence with an output channel" where calculating the transmission rate also contains information about the amount of frames and words transmitted).
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> Office Action, p. 9.

Applicant traverses the rejections of these claims, noting that the ER calculation taught by Soumiya is not an actual measured data rate, but instead a calculated bandwidth used to configure a communication channel.

More specifically, Soumiya teaches,

> A rate calculating unit **104** (rate calculating unit **206**) is arranged for a low-speed transmission channel whose transmission rate is lower than that of the transmission channel of the switching unit **101** in the cell switch, such as a demultiplexer **108** (demultiplexer **205**). It is intended to calculate an explicit rate (allowed transmission rate Ba(n)) for designating a transmission rate for the transmitting terminal **109**. More specifically, the rate calculating unit **104** counts the number of active virtual connections in which a cell transmitted on the low-speed transmission channel, and whose transmission rate may be changed at the transmitting terminal **109**, for each output channel (each subscriber line), divides the transmission rate set for each output channel by the number of active virtual connections for each output channel, and calculates an explicit rate based on the result of the division.
>
> Soumiya, col. 25, ll. 23-38.

Thus, the explicit rate (ER) taught by Soumiya is a configuration parameter representing an equal allocation of the available bandwidth between virtual connections on a communication channel. This bandwidth allocation determines the allowed transmission rate Ba(n) configured for each connection, i.e., the configured bandwidth of each connection. The calculation is based only on the number of active connections and the total available bandwidth of the channel. Further, the text in column 35 of Soumiya cited in the Office Action merely teaches that the interval between calculations may vary.[8] There is no teaching or suggestion that the various intervals are used in the actual calculation of the rate itself, as alleged in the Office Action. Indeed, as already shown above, the ER is simply the total configured bandwidth of the channel divided by the number of active connections.

By contrast, the claims require including in the added information one or more of the speed of, transmit and receive rates of, and number of frames transmitted and received by one or more ports over one or more periods of time. These are actual values measured at the port, not calculated maximum values used to configure and limit the data rate of a connection such as the ER value taught by Soumiya.

[8] *See* Soumiya, col. 35, ll. 21-27 ("Considering the operations for calculating the explicit rate ER performed by a switch, the prolongment of the observation period means that an interval between ER calculation times becomes longer. That is, the interval between ER calculation times becomes longer due to the prolonged observation period because the ER is calculated each time one observation period elapses.").

For at least these reasons, Applicant submits that none of the cited art, either alone or together, teaches or suggests all of the limitations of dependent claims 2-7, 56-61, 74-79 and 91-96, and thus does not render the claims obvious. Applicant therefore respectfully requests withdrawal of the rejections of these claims.

IV. Conclusion

Applicant respectfully requests reconsideration and that a timely Notice of Allowance be issued in this case. Applicant believes that no extensions of time or fees are required, beyond those that may otherwise be provided in documents accompanying this response. Nonetheless, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any fees required (including fees for net addition of claims) are hereby authorized to be charged to Wong Cabello's Deposit Account No. 50-1922, referencing docket number 112-0139US.

Respectfully submitted,

/Roberto de León/

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